

PIPER PLASTICS, INC.

Kyron[®]MAX

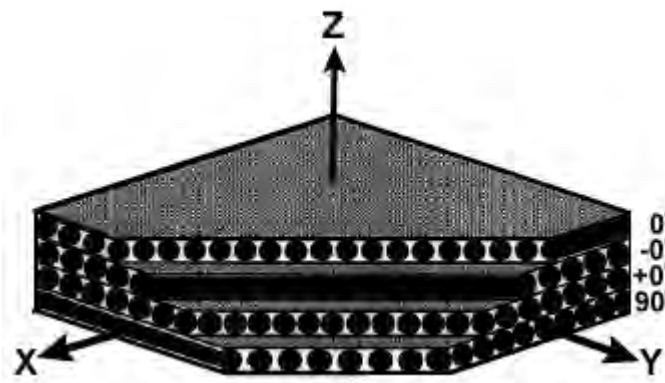
MACHINING • FABRICATION • DISTRIBUTION
PLASTICS & METALS

www.piperplastics.com

Kyron MAX Ultra Strength Polymers Bridge the Gap
Between Conventional Injection Moldable Filled Polymers and
Expensive Lay-up Composites

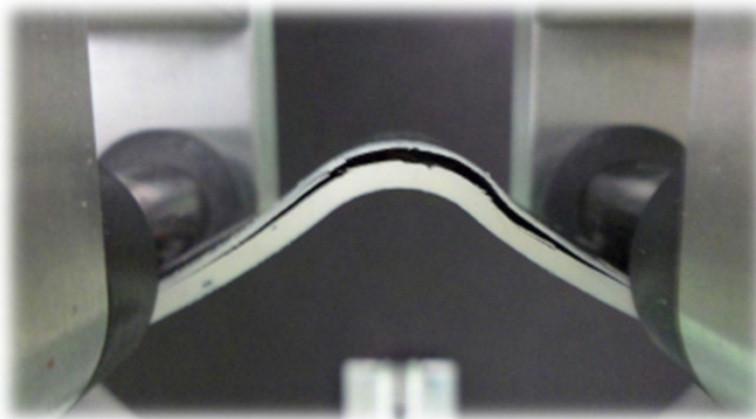
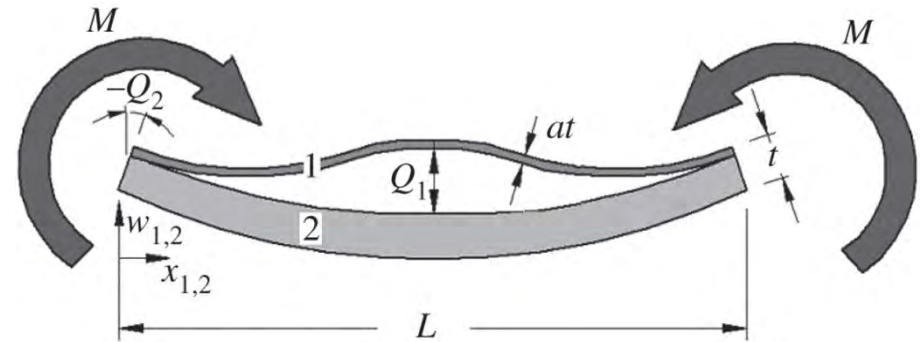


Lay-up & Compression Molded Composites



The inherent shear planes in lay-up and compression molded composites result in non-isotropic properties, shear fracture risk and structural damage due to delamination

Delamination of conventional lay-up composites



Kyron[®]MAX

	Kyron MAX S Series	Kyron MAX ES Series	Kyron MAX XS Series
Tensile Strength	Up to 50,000 psi/ (345 MPa)	50,000-75,000 psi/ (345-517 MPa)	75,000 - 120,000 psi/ (517-827 MPa)
Tensile Modulus	Up to 5 million psi/ (35 GPa)	5-8 million psi/ (35-55 GPa)	8-12 million psi/ (55-83 GPa)
Fillers	MAX Fibers	MAX Fibers, Glass, Carbon	MAX Fibers, Glass, Carbon
Polymers	PEEK, PPS, PEI, PPA, PA	PEEK, PPA	PEEK, PPA
Metal Replacement	Aluminum, Cast Iron, Magnesium	Steel, Aluminum, Cast Iron, Magnesium	Titanium, Stainless Steel, Steel, Aluminum, Cast Iron, Magnesium

Kyron MAX "S" Series

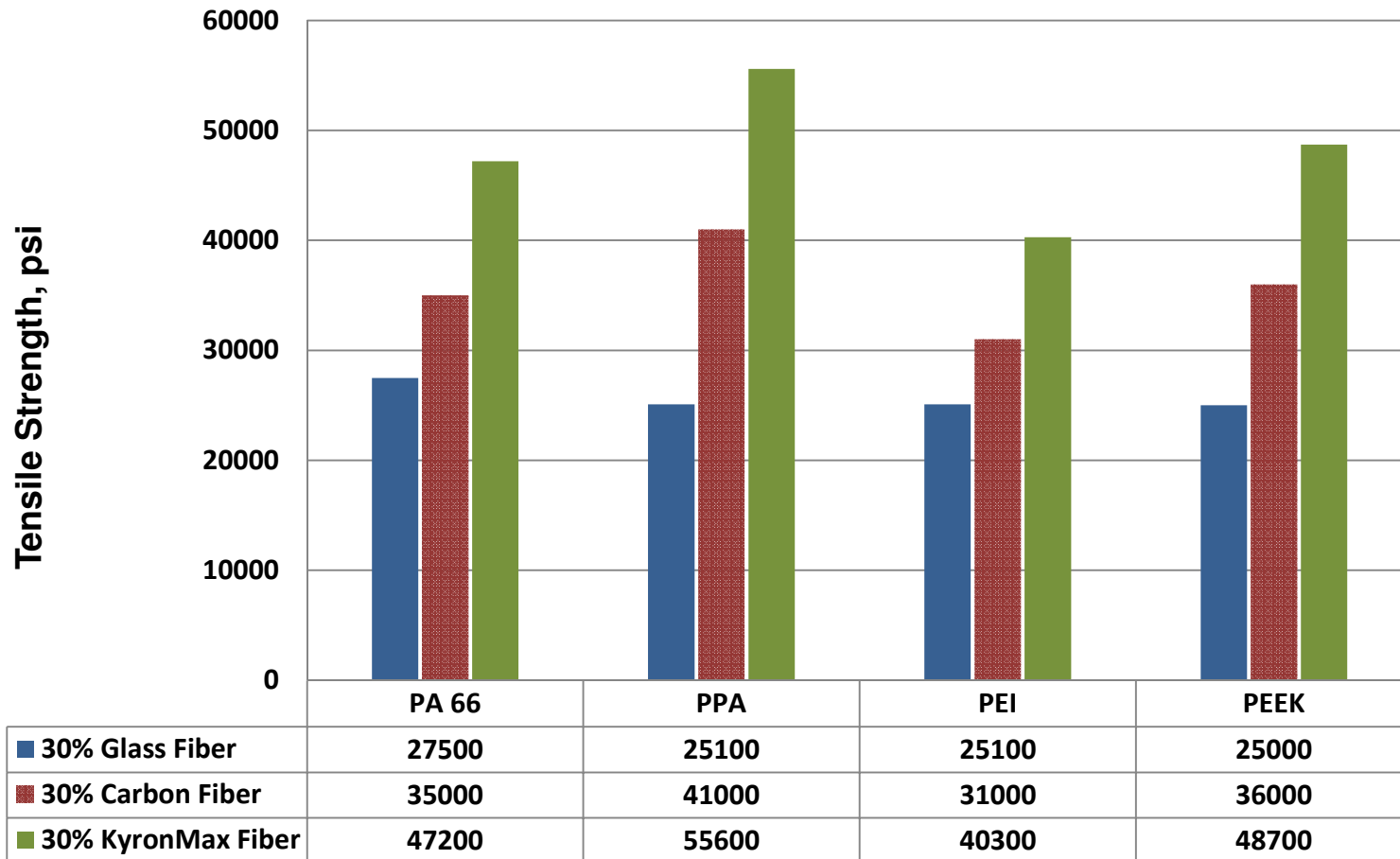
PIPER
PLASTICS, INC.

Kyron[®]MAX

	Kyron MAX S Series	Kyron MAX ES Series	Kyron MAX XS Series
Tensile Strength	Up to 50,000 psi/ (345 MPa)	50,000-75,000 psi/ (345-517 MPa)	75,000 - 120,000 psi/ (517-827 MPa)
Tensile Modulus	Up to 5 million psi/ (35 GPa)	5-8 million psi/ (35-55 GPa)	8-12 million psi/ (55-83 GPa)
Fillers	MAX Fibers	MAX Fibers, Glass, Carbon	MAX Fibers, Glass, Carbon
Polymers	PEEK, PPS, PEI, PPA, PA	PEEK, PPA	PEEK, PPA
Metal Replacement	Aluminum, Cast Iron, Magnesium	Steel, Aluminum, Cast Iron, Magnesium	Titanium, Stainless Steel, Steel, Aluminum, Cast Iron, Magnesium

Tensile Comparison vs. Fiber Technology

Tensile strength comparison using the same fiber loading



Kyron MAX “ES” Series

PIPER
PLASTICS, INC.

Kyron[®]MAX

	Kyron MAX S Series	Kyron MAX ES Series	Kyron MAX XS Series
Tensile Strength	Up to 50,000 psi/ (345 MPa)	50,000-75,000 psi/ (345-517 MPa)	75,000 - 120,000 psi/ (517-827 MPa)
Tensile Modulus	Up to 5 million psi/ (35 GPa)	5-8 million psi/ (35-55 GPa)	8-12 million psi/ (55-83 GPa)
Fillers	MAX Fibers	MAX Fibers, Glass, Carbon	MAX Fibers, Glass, Carbon
Polymers	PEEK, PPS, PEI, PPA, PA	PEEK, PPA	PEEK, PPA
Metal Replacement	Aluminum, Cast Iron, Magnesium	Steel, Aluminum, Cast Iron, Magnesium	Titanium, Stainless Steel, Steel, Aluminum, Cast Iron, Magnesium

KyronMAX ES Series

PIPER
PLASTICS, INC.

	ES-9255	ES-9155	
	Conductive	Non-Conductive	
Tensile Strength	70,000	42,000	
Tensile Modulus	7,700,000	4,620,000	
Flexural Strength	80,000	48,000	
Flexural Modulus	7,000,000	4,200,000	
Compression Strength	61,000	36,600	
Surface Resistivity	$< 10^2$	$> 10^{13}$	
Volume Resistivity	$< 10^2$	$> 10^{13}$	
Density	1.62	1.7	
Specific Strength - Tensile	43,000	24,706	

Kyron MAX “XS” Series

PIPER
PLASTICS, INC.

Kyron[®]MAX

	Kyron MAX S Series	Kyron MAX ES Series	Kyron MAX XS Series
Tensile Strength	Up to 50,000 psi/ (345 MPa)	50,000-75,000 psi/ (345-517 MPa)	75,000 - 120,000 psi/ (517-827 MPa)
Tensile Modulus	Up to 5 million psi/ (35 GPa)	5-8 million psi/ (35-55 GPa)	8-12 million psi/ (55-83 GPa)
Fillers	MAX Fibers	MAX Fibers, Glass, Carbon	MAX Fibers, Glass, Carbon
Polymers	PEEK, PPS, PEI, PPA, PA	PEEK, PPA	PEEK, PPA
Metal Replacement	Aluminum, Cast Iron, Magnesium	Steel, Aluminum, Cast Iron, Magnesium	Titanium, Stainless Steel, Steel, Aluminum, Cast Iron, Magnesium

KyronMAX XS Series

PIPER
PLASTICS, INC.

	XS-9260	XS-9160
	Conductive	Non-Conductive
Tensile Strength	122,000	88,000
Tensile Modulus	8,500,000	3,000,000
Flexural Strength	133,000	92,800
Flexural Modulus	8,100,000	3,080,000
Compression Strength	84,600	89,000
Compression Modulus	8,100,000	3,000,500
Poisson's Ratio	0.33	0.29
Surface Resistivity	$< 10^2$	$> 10^{13}$
Volume Resistivity	$< 10^2$	$> 10^{13}$
Density	1.79	1.7
Specific Strength - Tensile	68,150	51,800

KyronMAX XS-9260 Example

PIPER
PLASTICS, INC.

KyronMAX XS

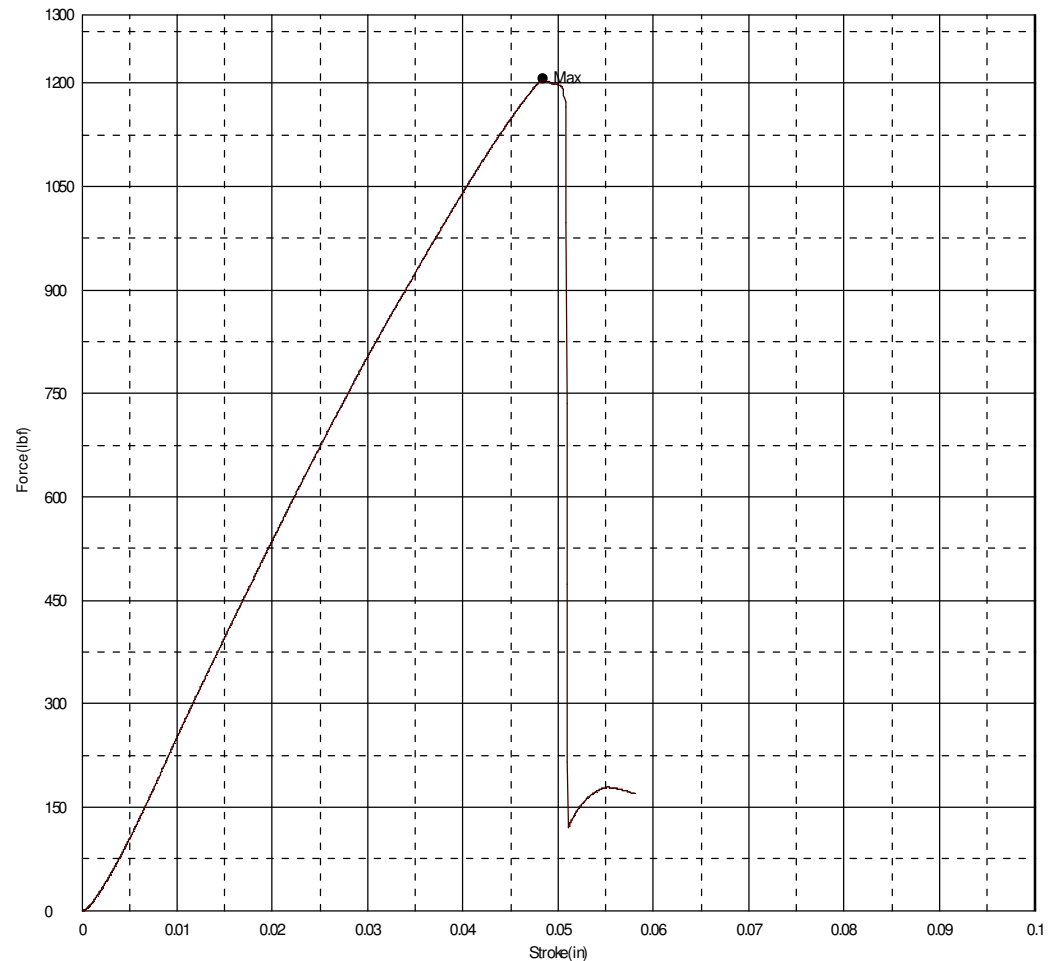
Molded 1/4"-20 Bolt

Tensile tested to determine maximum load strength

Results

1,200 lb Tensile strength
Non Conductive Material
KyronMAX XS-9160

1,800 lb + Tensile Strength
Conductive Material (XS-9260)



PIPER
PLASTICS, INC.

Kyron[®]MAX

Questions?

MACHINING • FABRICATION • DISTRIBUTION
PLASTICS & METALS

www.piperplastics.com